

Appl. No.: 10/068,570
Amdt. dated 05/27/2005
Reply to Office Action of December 29, 2004

REMARKS/ARGUMENTS

Applicants acknowledge with appreciation the consideration of the amendment and affidavit filed on November 5, 2004 as well as the consideration of Applicants' previously-filed IDSs as returned with the Office Action of December 29, 2004.

Claims 1, 3-19, and 23-25 are pending in the application. In view of the following remarks and arguments, reexamination and reconsideration of the claims are respectfully requested.

The Rejections of Claims Under 35 U.S.C. §102(e) Should Be Withdrawn

The Office Action (December 29, 2004, page 2, #1) has rejected claims 1, 8, and 9 under 35 U.S.C. §102(e) as being anticipated by Wagner *et al.* (U.S. Pat. No. 6,630,358). The Wagner reference is characterized (Office Action of 12/29/04, page 3, first paragraph) as teaching "a protein array for *in vitro* screening of biomolecular activity." However, the Office Action acknowledges (page 5, #6) that the Wagner reference is silent in "using piezoelectric crystal or acoustic wave sensor as the detection means."

As is discussed in the current specification, the sensor device of the present invention comprises a piezoelectric crystal sensor (*e.g.*, p. 11, line 16). This aspect of the invention is emphasized in clauses (d) and (f) of pending claim 1, both of which refer to a "signal output" from the sensor. Applicants believe that these limitations in claim 1, in view of the description in the specification, serve to distinguish the claimed invention from the disclosure in the Wagner reference. In view of this clarification, Applicants respectfully request that the rejection of claims under 35 U.S.C. § 102(e) be reconsidered and withdrawn.

The Rejections of Claims Under 35 U.S.C. §103 Should Be Withdrawn

The Office Action (December 29, 2004, page 4, #4) has rejected claims 6-7 under 35 U.S.C. §103(a) as being obvious over the Wagner reference in view of Ebato *et al.* (1994) *Anal. Chem.* 66: 1683. The Wagner reference is characterized (Office Action of 12/29/04, page 3, first paragraph) as teaching "a protein array for *in vitro* screening of biomolecular activity." The

Reply to Office Action of December 29, 2004

Ebato reference is characterized (Office Action of 12/29/04, page 4, #4) as disclosing that “using a spacer in the Langmuir-Blodgett film can increase coupling of the target molecules.” The Office Action concludes that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Wagner *et al.* with the spacer technique as taught by Ebato *et al.* in order to increase the sensitivity of the assay.”

Applicants would like to clarify on the record the teachings of the Ebato reference. The Ebato reference teaches the deposition of Langmuir-Blodgett films comprising fluorescein-derivatized lipids onto the gold surface of a quartz crystal microbalance and the detection thereby of the binding of anti-fluorescyl IgG. However, the Ebato reference does not teach the use of a peptide coupled to a sensor. Similarly, the Wagner reference does not teach the use of a piezoelectric crystal as the detection means. Applicants believe that at most, the cited combination of the Ebato reference with the Wagner reference (as well as with previously cited references) does not render the claimed invention obvious but rather merely suggests that one could experiment on combining various aspects of the teachings in order to test new devices and methods for performing various assays. This does not constitute a proper showing of obviousness. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987) (stating that “obvious to try” is not the correct standard for determining obviousness); *see also In re Eli Lilly & Co.*, 902 F.2d 943, 945 (Fed. Cir. 1990) (stating that “[a]n ‘obvious-to-try’ situation exists when a general disclosure may pique the scientist’s curiosity, such that further investigation might be done as a result of the disclosure, but the disclosure itself does not contain a sufficient teaching of how to obtain the desired result, or that the claimed result would be obtained if certain directions were pursued”). The cited combination of the Wagner reference and the Ebato reference does not suggest the claimed method steps of preparing a sensor which comprises a piezoelectric crystal to be coupled to said peptide by depositing a Langmuir-Blodgett film on said sensor and coupling said peptide to said sensor, nor would one of skill in the art have had a reasonable expectation that the teachings of the cited references could be combined to provide an assay with superior properties as demonstrated by Applicants’ working Example 1 (p. 22 *et seq.*). For these reasons, Applicants believe that a *prima facie* case of obviousness has not been established. Accordingly, Applicants

Appl. No.: 10/068,570

Amdt. dated 05/27/2005

Reply to Office Action of December 29, 2004

respectfully request that the Examiner reconsider and withdraw this rejection under 35 U.S.C. §103.

The Office Action (December 29, 2004, page 4, #5) has rejected claims 10-13 and 16-19 under 35 U.S.C. §103(a) as being obvious over the Wagner reference in view of Samoylova *et al.* (1999) *Muscle & Nerve* 22: 460-466. The Wagner reference is characterized (Office Action of 12/29/04, page 3, first paragraph) as teaching “a protein array for *in vitro* screening of biomolecular activity.” The Samoylova reference is characterized as disclosing a muscle-specific peptide and the use of phage libraries for screening. The Office Action concludes that “it would have been obvious to one of ordinary skill in the art at the time the invention was made...to incorporate the muscle-specific ASSLNIA peptide (peptide of interest) to the sensor surface to screen candidate muscle-specific binding ligands with reasonable expectation of success....”

As is discussed in the current specification, the sensor device of the present invention comprises a piezoelectric crystal sensor (*e.g.*, p. 11, line 16). This aspect of the invention is emphasized in clauses (d) and (f) of pending claim 1, both of which refer to a “signal output” from the sensor. Applicants believe that these limitations in claim 1, in view of the description in the specification, serve to distinguish the claimed invention from the disclosure in the Wagner reference.

As summarized in MPEP §2142:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest *all* the claim limitations.

(emphasis added). Here, because the cited references do not teach or suggest all the elements of the claims, a *prima facie* case of obviousness has not been established. Accordingly, Applicants respectfully request that this rejection under 35 U.S.C. §103 be reconsidered and withdrawn.

Reply to Office Action of December 29, 2004

The Office Action (December 29, 2004, page 5, #6) has rejected claims 14-15 under 35 U.S.C. §103(a) as being obvious over the Wagner reference in view of Hengerer *et al.* (1999) *Biosensors & Bioelectronics* 14: 139. The Wagner reference is characterized (Office Action of 12/29/04, page 3, first paragraph) as teaching “a protein array for *in vitro* screening of biomolecular activity.” The Hengerer reference is characterized as disclosing an immunosensing system based on a quartz crystal microbalance and coupling peptides of interest on the surface of the sensor.

Applicants respectfully note, as discussed above, that the Wagner reference does not teach the use of a piezoelectric crystal as the detection means. Similarly, the Hengerer reference does not teach the use of Langmuir-Blodgett films to couple a peptide to the sensor. Applicants believe that at most, the cited combination of the Wagner reference with the Hengerer reference does not render the claimed invention obvious but rather merely suggests that one could experiment on combining various aspects of the teachings in order to test new devices and methods for performing various assays. This does not constitute a proper showing of obviousness. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987) (stating that “obvious to try” is not the correct standard for determining obviousness); *see also In re Eli Lilly & Co.*, 902 F.2d 943, 945 (Fed. Cir. 1990) (stating that “[a]n ‘obvious-to-try’ situation exists when a general disclosure may pique the scientist’s curiosity, such that further investigation might be done as a result of the disclosure, but the disclosure itself does not contain a sufficient teaching of how to obtain the desired result, or that the claimed result would be obtained if certain directions were pursued”). The cited combination of the Wagner reference and the Hengerer reference does not suggest the claimed method steps of preparing a sensor to be coupled to said peptide by depositing a Langmuir-Blodgett film on said sensor and coupling said peptide to said sensor. There does not appear to be any motivation in the references to modify and combine the teachings in the manner proposed, nor would one of skill in the art have had a reasonable expectation that the teachings of the cited references could be combined to provide an assay with superior properties as demonstrated by Applicants’ working Example 1 (p. 22 *et seq.*). For these reasons, Applicants believe that a *prima facie* case of obviousness has not been established. Accordingly, Applicants

Appl. No.: 10/068,570
Amdt. dated 05/27/2005

Reply to Office Action of December 29, 2004

respectfully request that the Examiner reconsider and withdraw this rejection under 35 U.S.C. §103.

In light of the above amendments and discussion, Applicants respectfully request the withdrawal of all of the rejections of the claims for obviousness over the cited references.

CONCLUSION

In view of the above amendments and remarks, Applicants submit that the rejections of the claims under 35 U.S.C. §§102(e) and 103 are overcome. Applicants respectfully submit that this application is now in condition for allowance. Early notice to this effect is solicited.

If in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject Application, the Examiner is invited to call the undersigned.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required

Appl. No.: 10/068,570
Amdt. dated 05/27/2005
Reply to Office Action of December 29, 2004

therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

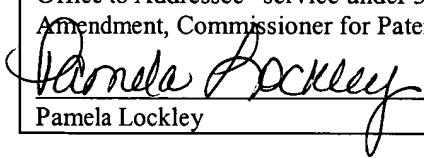


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